#19

Initial Review
BOX AF

PATENT
Docket No.: 45751USA6C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	**BOX AF**
JOSEPH P. KRONZER et al.	Group Art Unit: 3312
Serial No.: 08/661,834	
Filed: June 11, 1996	Examiner: Aaron J. Lewis
For: FIBROUS FILTRATION FACE MASK	

APPEAL BRIEF

Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir:

This Appeal Brief is submitted in accordance with the terms of 35 U.S.C. SS 134 and 37 C.F.R. § 1.192 in response to the final Office Action mailed October 2, 1996. Appellants furnish the Appeal Brief in triplicate. Please charge the processing fee required in 37 C.F.R. §1.17(f) to Deposit Account No. 13-3723.

I. Real Party In Interest

The Minnesota Mining and Manufacturing Company (3M), St. Paul, Minnesota is the real party in interest. The inventors assigned their rights to 3M by virtue of an Assignment that is of record in a prior application.

II Related Appeals and Interferences

Appellants are unaware of any related appeals or interferences.

III. Status of Claims

Claims 25-34 are pending in the application and are the subject of this appeal. A copy of these claims may be found in the Appendix to this Appeal Brief. Claims 1-24 were cancelled when this divisional application was filed. The cancelled claims are the subject of U.S. Patent No. 5,307,796.

IV. Status of Amendments

No amendment has been filed after the final Office Action.

V. Summary of the Invention

Appellants' invention is a fibrous filtration face mask that is capable of maintaining low degrees of surface fuzz. Persons who wear cup-shaped fibrous filtration face masks have complained that the fibers in the mask create a tickling sensation, making them want to scratch their face. Because fibrous filtration face masks are worn to protect wearers from breathing impurities in the air or to protect others from being exposed to impurities exhaled by the wearer, persons wearing such masks must resist displacing the mask from their face to relieve the itching sensation. Otherwise, the wearer may risk exposing themselves or others to potentially dangerous impurities. The appellants have significantly alleviated the surface fuzz problem by providing a face mask that includes a non-woven fibrous layer that is molded into a cup-shaped configuration, where the fibrous layer contains at least 40 weight percent thermally bonding fibers and at least 10 weight percent of the fibers are bicomponent fibers. The molded, cup-shaped, non-woven fibrous layer has a surface fuzz value of not less than 7.5 after being subject to a surface fuzz abrasion test. The face mask of this construction may be assembled in accordance with the method that was patented by appellants in U.S. Patent 5,307,796.

VI. Issues Presented

Whether the Examiner erred in rejecting claims 25-34 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent 4,807,619 to Dyrud et al. (Dyrud) and U.S. Patent 4,363,682 to Thiebault.

VII. Grouping of claims

The rejected claims stand or fall together.

VIII. Argument

The Dyrud Patent

Dyrud discloses a fibrous filtration face mask that has one or more molded fibrous shaping layers with a fibrous filtration layer disposed on one side or between the molded shaping layers.

The shaping layers can be prepared from fiber mixtures including staple fiber and bicomponent fiber in a weight-percent ratio ranging from 0/100 to 75/25. Preferably, the shaping layers include at least 50 weight-percent bicomponent fiber, and more preferably at least 75 weight-percent bicomponent fiber (column 4, lines 29-37). Dyrud also discloses that his face mask can be prepared without bicomponent fiber (column 4, lines 38-39).

Dyrud's filtration layer typically comprises fibers that do not become bonded together during the molding operation (column 6, lines 64-64). Preferred fibers are electrically-charged polypropylene melt-blown fibers having an average diameter of less than 10 micrometers (column 7, lines 1-15).

The Thiebault Patent

Thiebault discloses a process for smoothing the fluffy surface on a filtration layer. The process includes exerting light friction under low pressure so that projecting fibers are smoothed down on the subjacent fibrous mask without being compressed. The friction is exerted at the softening temperature such that the superficial fibers are welded to one another to form a skin or porous glaze that is relatively smooth and exempt from fibers that brush up and are capable of being detached. The fibers that are used in Thiebault's filtration layer may be electrically charged polypropylene fibers.

Appellant's Invention Would Not Have Been Obvious

Appellants' invention is neither taught nor suggested by the Dyrud and Thiebault patents. Although Dyrud discloses a face mask that contains appellants' molded nonwoven layer, nowhere does Dyrud indicate how to maintain low degrees of surface fuzz on this layer. Thiebault does deal

with a surface fuzz problem, but, Thiebault only deals with this problem in regard to a filtration layer. Thus, even if the teachings of Dyrud and Thiebault were combined, the result would be a fibrous face mask that has a smooth filtering layer. The filtering layer would not contain the composition of appellants' nonwoven fibrous layer; nor would it be molded. Please note that the teachings in Dyrud that discuss thermally bonding bicomponent fibers only pertain to the composition of a shaping layer and not a filtration layer. Nowhere does Dyrud or Thiebault provide any teaching that would motivate a person skilled in the art to reduce surface fuzz in Dyrud's molded cup-shaped shaping layer.

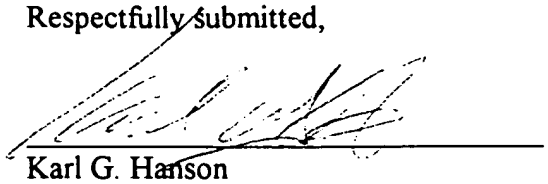
In appellants' invention, it is the molded layer (i.e., the shaping layer) that is able to demonstrate a surface fuzz value of not less than 7.5. Appellants' claims specifically indicate that their nonwoven fibrous layer, which contains at least 40 weight percent thermally bonding fibers, and at least 10 weight percent bicomponent fibers, is *molded* in a cup-shaped configuration. The filtration layer that is surface-treated in Thiebault is not a molded layer. As shown in Figure 1 of Thiebault, layer 1, the filtration layer, is surface-treated at 5. Layer 4 in Thiebault is the shaping layer that would correspond to the layer in Dyrud that contains the bicomponent fibers. In this regard, see Dyrud at column 6, lines 63-65 ("[T]he filtration layer comprises fibers that do not become bonded together during the molding operation."). Thus, the combined teachings of Dyrud and Thiebault fall short of suggesting appellants' invention. Without any teaching or suggestion in either or both of these references of how to produce a molded nonwoven face mask that maintains low degrees of surface fuzz, appellants' invention would not have been obvious to a person of ordinary skill within the meaning of 35 U.S.C. § 103.

IX. Conclusion

For the above reasons and those presented in appellants' previously-filed Responses (incorporated here by reference), appellants respectfully submit that the Examiner has erred in rejecting this application under 35 U.S.C. § 103. Please reverse the Section 103 rejection.

Dated this 19th day of February, 1997.

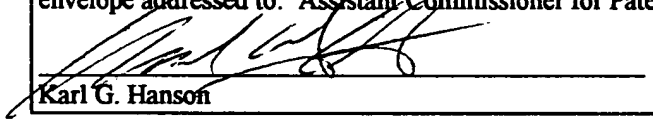
Respectfully submitted,



Karl G. Hanson
Attorney for Appellant
Registration No. 32,900

3M Office of Intellectual Property Counsel
P.O. Box 33427
St. Paul, Minnesota 55133-3427
Telephone: (612) 736-7736
Facsimile: (612) 736-3833

I certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on:



Dated: February 19, 1997

Karl G. Hanson

APPENDIX

25. A fibrous filtration face mask for filtering contaminants and/or particulate matter, which comprises:

(a) a means for securing the mask to the face of a wearer; and

(b) a non-woven fibrous layer attached to the securing means and containing (i) at least about 40 wt.% thermally bonding fibers based on the weight of the fibers in the non-woven fibrous layer, at least about 10 wt.% of the fibers in the non-woven layer being bicomponent fibers, and optionally (ii) staple fibers, the non-woven fibrous layer being molded in a cup-shaped configuration and having a surface fuzz value of not less than 7.5 after being subjected to a surface fuzz abrasion test.

26. The face mask of claim 25, wherein the mask has at least two non-woven layers containing bonded thermally bonding fibers, the first non-woven layer containing about 60 wt. % bicomponent fibers and about 40 wt.% staple fibers, the second non-woven layer containing about 70 wt.% bicomponent fiber and about 30 wt.% binder fiber, the first layer being located on the inside of the second layer, and wherein the mask has a filtration layer containing blown microfibers located between the first and second non-woven layers.

27. The face mask of claim 25, wherein the surface fuzz value is not less than 8.0.

28. The face mask of claim 25, wherein the surface fuzz value is not less than 9.0.

29. The face mask of claim 25, wherein the bicomponent fiber content is at least 50 wt %.

30. The face mask of claim 25, wherein the bicomponent fiber content is at least 20 weight percent.

31. The face mask of claim 25, wherein the surface fuzz value is not less than 8.4.

32. A fibrous filtration face mask, which comprises:

(a) a harness; and

(b) a nonwoven fibrous layer attached to the harness and containing at least 40 weight percent thermally bonding fibers based on the weight of fibers in the nonwoven fibrous layer, at least 10 weight percent of the fibers in the nonwoven layer being bicomponent fibers, the nonwoven fibrous layer being molded in a cup-shaped configuration and having a surface fuzz value of not less than 7.5 after being subjected to a surface fuzz abrasion test.

33. The fibrous filtration face mask of claim 32, wherein the nonwoven fibrous layer contains at least 20 weight percent bicomponent fiber and the surface fuzz value is not less than 8.4 after being subjected to a surface fuzz abrasion test.

34. The fibrous filtration face mask of claim 32, wherein the nonwoven fibrous layer consists essentially of at least 20 weight percent bicomponent fibers, 0 to 80 weight percent binder fibers, and 0 to 50 weight percent staple fibers, based on the weight of fibrous material in the nonwoven fibrous layer, and wherein the nonwoven fibrous layer supports a filtration layer that contains melt-blown microfibers.